Listing of Claims:

Claims 1-43 (Canceled).

Claim 44 (Currently Amended): A three-dimensional display device comprising:

a phantom three-dimensional display device for displaying a phantom three-dimensional image comprised of an aggregation of depth sampled images in a depth direction; and

a shutter device having a plurality of shutter elements for controlling a light transmittance of the displayed phantom three-dimensional image and having control means for controlling selection of the shutter elements,

wherein the shutter elements are arranged such that a position of each shutter element is consistent with a position at a portion of the phantom image in the depth direction; ~~at positions where the displayed phantom three-dimensional image is located in a depth direction, and each~~

wherein a plurality of the shutter elements are controlled at the same time such that each shutter element is set to an opening state or a closing state partially at one moment, and wherein one portion of the phantom image according to a position of the shutter element in the depth direction becomes a transparent state partially when the shutter element is set to the opening state partially and another portion of the phantom image according to a position of the shutter element in the depth direction becomes a non-transparent state partially when the shutter element is set to the closing state partially ~~is selected in a time division manner respectively so as to vary the light transmittance of the displayed phantom three-dimensional image in the depth direction~~.

Claim 45 (Previously Amended): A three-dimensional display device as set forth in claim 44, wherein said shutter elements are two-dimensionally divided in a plane perpendicular to the depth direction of the displayed phantom three-dimensional image, and each of divided regions is controlled independently by the control means.

Claim 46 (Currently Amended): A three-dimensional display device as set forth in claim 44, wherein a predetermined shutter element lowers a light transmittance in ~~the~~ a region of the displayed phantom three-dimensional image at each position of the shutter elements controlled by the control means when the displayed phantom three-dimensional image is located in the depth direction in a time division manner.

Claim 47 (Previously Amended): A three-dimensional display device comprising:

a phantom three-dimensional display device for displaying a phantom three-dimensional image comprised of an aggregation of depth sampled images; and

a shutter device having a plurality of shutter elements for controlling a light transmittance,

wherein the shutter elements are arranged at positions where the depth sampled images are displayed in a depth direction, and each of the shutter elements are controlled in a time division manner respectively so as to vary the light transmittance, and

wherein the material of said shutter element is one or combination of guest-host type liquid crystal containing diachronic dye having a different light beam absorption depending upon an orientation of molecules and liquid crystal having dielectric constant anisotropy, polymer dispersion type liquid crystal containing droplet-like liquid crystal in polymer, polymer dispersed liquid crystal containing a polymer network in liquid crystal,

a holographic polymer dispersed liquid crystal having a layer structure of polymer dispersed liquid crystal containing droplet like liquid crystal in polymer and polymer, a holographic polymer dispersed liquid crystal having a layer structure of said polymer dispersed liquid crystal containing a polymer network in the liquid crystal and polymer, and a polymer dispersed liquid crystal wherein said liquid crystal in said polymer dispersed liquid crystal is said guest-host type liquid crystal.

Claim 48 (Previously Amended): A three-dimensional display device comprising:

a phantom three-dimensional display device for displaying a phantom three-dimensional image comprised of an aggregation of depth sampled images; and

a shutter device having a plurality of shutter elements for controlling a light transmittance,

wherein the shutter elements are arranged at positions where the depth sampled images are displayed in a depth direction, and each of the shutter elements are controlled in a time division manner respectively so as to vary the light transmittance, and wherein said phantom three-dimensional display device is constructed with a two-dimensional image display device and a varifocal optical device.

Claim 49 (Currently Amended): A three-dimensional display device comprising:

a phantom three-dimensional display device for displaying a phantom three-dimensional image comprised of an aggregation of depth sampled images; and

a shutter device having a plurality of shutter elements for controlling a light transmittance,

wherein the shutter elements are arranged at ~~a~~ real ~~position~~ positions according to

~~a~~ depth ~~position~~ positions where the depth sampled images are displayed as optical real images, and the shutter elements are photoreactive elements for lowing a light transmittance in a region of the depth sampled images at the positions of the shutter elements according to the real position.

Claim 50 (Original): A three-dimensional display device as set forth in claim 49, wherein a material of said photoreactive element is one of a photochromic material, a material consisting of a material causing a photostructural change and liquid crystal, and a material having a nematic-anisotropic phase transition temperature to be varied by photostructural change.

Claim 51 (Original): A three-dimensional display device as set forth in claim 49, wherein said phantom three-dimensional display device includes a two-dimensional image display device and a varifocal optical device.

Claim 52 (Canceled).

Claim 53 (Previously Amended): A head-mount display device comprising:

two display devices corresponding to left and right eyes wherein each device includes a two-dimensional display device and an optical device having a variable focal length; and

a control device for controlling said two-dimensional display device, said optical device having a variable focal length and a deflection device for varying a direction of a light incident to said optical device,

wherein the control device controls the display and optical devices so that the focal lengths of the optical device are focused on the positions of the depth sampled images, and controls said optical device in such a way that when the image is moving closer to the eyes according to a change of the focal length, the overall display image of said two-dimensional display device is deflected to be closer toward the center between the left and right eyes.

Claim 54 (Previously Amended): A head-mount display device comprising:

two display devices corresponding to left and right eyes wherein each device includes a two-dimensional display device and an optical device having a variable focal length; and

a control device for controlling said two-dimensional display device and said optical device having a variable focal length,

wherein the control device controls the display and optical devices so that the focal lengths of the optical device are focused on the positions of the depth sampled images,

wherein said optical device has a transparent material, a layer including a variable refractive index material, and at least a pair of transparent electrodes for sandwiching said layer, and

wherein the transparent material is comprised of one of forms of a fixed focus lens shape, a fixed prism shape, and a shape where the fixed deflection mechanism is incorporated into the fixed focus lens.

Claim 55 (Original): A head-mount display device as set forth in claim 54, wherein said variable refractive index material is liquid crystal having dielectric constant anisotropy

and refractive index anisotropy.

Claim 56 (Original): A head-mount display device as set forth in claim 55, wherein said variable refractive index material is liquid crystal having dielectric constant anisotropy and refractive index anisotropy, and being dual-frequency liquid crystal having a different physical property having a different sign of a difference in a dielectric constant corresponding to orientation of the liquid crystal molecules between different frequencies f1 and f2.

Claim 57 (Original): A head-mount display device as set forth in claim 54, wherein said variable refractive index material is polymer dispersed liquid crystal, and the droplet size of the liquid crystal, or the droplet size of the polymer is smaller than a wavelength of visible light.

Claim 58 (Original): A head-mount display device as set forth in claim 54, wherein said fixed focus lens is spherical or non-spherical single lens or fresnel lens.

Claim 59 (Original): A head-mount display device as set forth in claim 54, wherein said fixed prism is simple prism or a multi-prism having an array of a plurality of fine prisms.

Claim 60 (Original): A head-mount display device as set forth in claim 54, the form where said fixed deflection mechanism is incorporated in to said fixed focus lens is in the form of increasing or decreasing an angle formed by a spherical or non-spherical simple

lens or a fresnel lens and an optical axis.

61 (Currently Amended): A head-mount display device ~~as set forth in claim 52,~~ comprising:

two display devices corresponding to left and right eyes wherein each device includes a two-dimensional display device and an optical device having a variable focal length; and

a control device for controlling said two-dimensional display device and said optical device having a variable focal length,

wherein the control device controls the display and optical devices so that the focal lengths of the optical device are focused on the positions of the depth sampled images,

said display devices are mounted to left and right eyes, and said control device synchronously drives said two-dimensional display device and said optical device to perform three-dimensional display, and

wherein said driving device sequentially applies voltages V1 to VN having primary frequencies f1 to fN ($N \geq 2$) to said transparent electrodes for a predetermined period of time and at a predetermined interval.